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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/980,016	04/08/2002	Rogier Eijkelhof	99.1091	2969
466	7590	08/06/2004	EXAMINER	
YOUNG & THOMPSON 745 SOUTH 23RD STREET 2ND FLOOR ARLINGTON, VA 22202			BARBEE, MANUEL L	
			ART UNIT	PAPER NUMBER
			2857	

DATE MAILED: 08/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/980,016	Applicant(s) EIJKELHOF, ROGIER	
	Examiner Manuel L. Barbee	Art Unit 2857	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 May 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 3 and 6-9 is/are allowed.
- 6) ☒ Claim(s) 1, 2, 4, 5 and 10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 2, 4 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Utgawa (US Patent No. 6,563,538) in view of Miyake (US Patent No. 5,917,963).

With regard to interpolation in a region of source values, as shown in claim 1, Utgawa teaches an interpolation device that interpolates the value of a point within a grid of known points (Abstract). With regard to measuring the dynamics of a local region of source values and using weighted interpolation to adjust the value of the target value, as shown in claim 1, and a weighting factor dependent on average local dynamics, as shown in claim 10, Utgawa teaches using grid points to calculate correlation and a weighting factor used to calculate an interpolation amount (col. 3, line 15 - col. 4, line 33). Utgawa does not teach determining a minimum and maximum value for the region or adjusting in the direction of the minimum or maximum, as shown in claim 1, or that the target value is determined on the basis of interpolation relative to the local maximum and minimum, as shown in claim 10.

Miyake teaches detecting a minimum and a maximum value in a window of values and using the minimum and maximum value and an interpolation value to calculate a new output value for a point (col. 5, line 25 - col. 6, line 15; col. 11, line 59 -

cool. 12, line 44). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the interpolation device, as taught by Utagawa, to include determining a minimum and a maximum value, as taught by Miyake, because then interpolation calculations would have considered the entire range of pixel values in the region used to interpolate the unknown point, and interpolation calculations would not have been limited to the nearest neighbor calculation (Miyake, col. 1, lines 10-31).

With regard to determining the dynamics as a normalized weighted value of the absolute differences in source values in the local region, as shown in claim 2, and making the direction of the adjustment dependent on the relative difference between target values, as shown in claim 4, Utagawa teaches calculating correlation amounts using the sum of the differences of the pixel outputs of the grid points (col. 21, lines 46-53). Miyake teaches determining the minimum and maximum value, as shown above with regard to claim 1.

3. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Utagawa in view of Miyake as applied to claim 1 above, and further in view of Wallis et al. (IEEE Transactions on Medical Imaging, 1997, Vol. 16).

Utagawa and Miyake teach all the limitations of claim 1 upon which claim 5 depends. Utagawa and Miyake do not teach the use of interpolation based on Guassian distribution, as shown in claim 5. Wallis et al. teach a reconstruction algorithm for an image that uses Gaussian interpolation (Abstract). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the interpolation device combination, as taught by Utagawa and Miyake, to include

Gaussian interpolation, as taught by Wallis et al., because then there would have been superior preservation of global and local image counts, accurate count positioning and uniform and predictable amount of blurring (Wallis et al., Abstract).

Allowable Subject Matter

4. Claims 3 and 6-9 are allowed.
5. The following is a statement of reasons for the indication of allowable subject matter: None of the prior art teaches a method for processing data in the form of a grid of discrete source values that includes determining at least one target value using weighted interpolation of the source values in a first region, determining a minimum and maximum value in a local region of the source values, determining a measure of the dynamics in the local region, the measure of dynamics being a normalized weighted value of the absolute difference in source values within the local region, wherein one of the absolute differences is calculated for each of the source values in the local region, and each difference is calculated between a given source value and a weighted average of source values in a further local region corresponding to the given source value and adjusting the target value in the direction of the maximum value or the minimum value based on the dynamics, as shown in claim 3. None of the prior art teaches a method for processing data in the form of a grid of discrete source values that includes determining at least one target value using weighted interpolation of the source values in a first region, determining a minimum and maximum value in a local region of the source values, determining a measure of the dynamics in the local region, adjusting the target value in the direction of the minimum or maximum value based on measured

dynamics, wherein one of the source values which lies in the grid closest to the target point is taken as source of a first region extending over a finite number of mutually adjacent source values and wherein the local maximum and local minimum are determined in the first region, as shown in claim 6.

Response to Arguments

6. Applicant's arguments filed 19 May 2004 have been fully considered but they are not persuasive. Applicant states that there is no suggestion in Miyake to adjust the target value in the direction of one of the minimum and maximum values on the basis of the determined measure of dynamics. Applicant states that Miyake averages the maximum and minimum values states that the average and difference replace the maximum and minimum values so that it would not be possible to determine which direction to make an adjustment. Applicant further states that Miyake uses a smoothing process that destroys correlation information. Miyake teaches using the maximum, minimum and interpolation values to calculate a new output value (col. 12, lines 39-44). While it may not be possible to determine the direction of adjustment, the value is adjusted using the maximum and minimum values and other dynamics of the region of values and any adjustment would be in one direction or the other. Filtering and smoothing the data does not prevent the data or dynamics of the region from being used in making the adjustment calculation. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the interpolation device, as taught by Utagawa, to include determining a minimum and a maximum value, as taught by Miyake, because then interpolation calculations would have considered the

entire range of pixel values in the region used to interpolate the unknown point, and interpolation calculations would not have been limited to the nearest neighbor calculation (Miyake, col. 1, lines 10-31).

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Manuel L. Barbee whose telephone number is 571-272-2212. The examiner can normally be reached on Monday-Friday from 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marc S. Hoff can be reached on 571-272-2216. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Art Unit: 2857

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-0976.

mlb


MARC S. HOFF
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800